

Plant Document Analysis

Generated on: 2025-12-03 12:02:18

End of Engineering Analysis Report

ENGINEERING SPECIFICATION ANALYSIS

Focus Area: Design Temperature

Generated on December 03, 2025

Section 1: Accepted Specifications for Evaluation of Design Temperature

- Design temperatures (°C) for each utility/system listed (raw water, sea water, desalinated water, cooling water, demineralized water, boiler feed water HHP/HP/MP/LP, potable water, fire water, steam HHP/HP/MP/LP, condensate HP/MP/LP, fuel gas, natural gas, PSA tail gas, syn gas, fuel oil, plant air, breathing air, instrument air, nitrogen systems, electricity-related systems) — explicitly identified in the document as required design temperatures (Specification 2 & Specification 3).
- Normal operating temperatures (°C) for each of the above utilities/systems — explicitly identified (Specification 4).
 - Maximum and minimum operating temperatures (°C) for each of the above utilities/systems — explicitly identified (Specification 5).
 - Requirement to provide design pressure–temperature pairs for utilities/systems (Specification 3) — i.e., design temperature paired with design pressure as a required input for evaluation.
 - The document's call for confirmation/updates to preliminary boundary limit information affecting pressures/temperatures (Additional Requirement 1) — relevant because confirmed boundary temperatures are standard inputs for defining design temperature conditions.
 - The client-provided finalized utility/system parameters (pressures and temperatures) as required inputs (Inputs Required from Client, Input 1) — explicitly required by the document and matching standard practice that design temperature must be supplied by client/project.

(Note) Industry standards that mandate provision of design temperature and temperature ranges for nozzle/piping/pressure-retaining component evaluation include ASME B31.3 (process piping), ASME Section VIII and relevant API codes (e.g., API 650 Appendix P for nozzle loads). The document lists the same categories of temperature data required by those

standards.)

Section 2: Measurements Provided in Document

- The document contains no numeric temperature values (design, normal, maximum or minimum) for any utility or system. It only lists the requirement to provide these temperatures (Specifications 2–5). No explicit temperature measurements are provided in the file.

Section 3: Inputs and Additional Requirements from Client (related to Design Temperature)

- Input 1: Finalized utility and system parameters including pressures and temperatures as per the listed specifications — client must supply numeric design, normal, max and min temperatures for each utility/system.
- Input 2: Detailed layout and geographic locations of utility sources, distribution networks, and destination points — requested to ensure accurate temperature determination (e.g., elevation/ambient/line routing may affect temperature selection).
- Input 3: Specific requirements or constraints related to the nozzle load analysis, including special considerations for critical equipment — to capture any temperature-related exceptions or special temperature-duty cases.
- Additional Requirement 1: Confirmation or updates on preliminary battery limit information for various utilities/systems — required to finalize design temperature boundaries.
 - Additional Requirement 2: Details on any integration with existing facilities/systems that may affect nozzle load analysis, including modifications — relevant where existing systems impose different temperature conditions.
- Numeric design temperature values for each listed utility/system.
- Numeric normal operating temperatures for each listed utility/system.
- Numeric maximum and minimum operating temperatures for each listed utility/system.
- Explicit mapping of each temperature value to the corresponding nozzle/equipment location (not provided).
 - Confirmation of whether transient/occasional temperature extremes (startup/shutdown/freeze, upset conditions) should be included (document requests special considerations but provides no specifics).

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